To sum up, more than two-thirds of the work of making the canal is now in execution, under formal engagements with contractors. The problem of the canal has been solved in principle. The period of installation or preparation has been succeeded by one of execution, based on a definitive programme, accepted by those who must carry it out, the Company itself maintaining an attitude of rigorous surveillance.

NOTES

THE fifty-eighth meeting of the German Association of Naturalists and Physicians will this year meet at Strassburg. Notices of communications and abstracts of papers should be sent to Herr J. Stilling. The meeting will commence on Thursday, September 17, and terminate on September 23,

THE local committee of the American Association has issued its second circular containing the general programme of the meeting at Ann Arbor. The meeting will be called to order on Wednesday, August 26, at 10 a.m., when Prof. Lesley will resign the chair to President-elect Prof. Newton of New Haven, and the usual addresses of welcome will be delivered. In the evening Prof. Lesley will give his presidential address. On Thursday evening the citizens of Ann Arbor will tender a reception at the Court House, and on Friday it is probable that a lawn party will be given on the University grounds. On Saturday a long excursion, as previously announced, will take place; on Monday a short excursion for the members of the Botanical Club has been planned, probably to the Tamarack swamp, one of the detached spots common in Southern Michigan where a northern flora has lingered under favourable conditions through the various climatic changes of later geologic times. It is probable that similar trips to points of local interest may be arranged for some of the sections. The chairman of Section C announces that the following subjects have been chosen for discussion: first, what is the best initiatory course of work for students entering upon laboratory practice? second, to what extent is a knowledge of molecular physics necessary for one who would teach theoretical chemistry? In the discussion in Section D, mechanical science, of the best method of teaching mechanical engineering, in order that what is read and said may be to the point, the following classification should be observed: (*a*) schools of mechanical engineering; (*b*) mechanic art schools for the education of superintendents, foremen, &c.; (*c*) manual training-schools. The distinction between "mechanical laboratory practice" and "shop practice" should also be made and appreciated.

THERE seems to be no doubt that Sir Nathaniel Barnaby is about to close his connection with the Admiralty as Director of Naval Construction. We shall be interested to see in what manner the new Government fills up the vacancy, and what treatment they give Sir Nathaniel's successor, who, it is rumoured, may be Mr. W. H. White. As is known, Mr. White some time ago resigned his connection with the Admiralty for a far more lucrative post in Sir W. Armstrong's works. "But there is a difficulty in the way," as the *Pall Mall Gazette* puts it. "Private firms can pay, and do pay, their chief constructors twice, three, and four times as much as the Admiralty. Perhaps Mr. White may consent to sacrifice some thousands a year for the honour and glory of serving his country, but the time will come when scientific skill, like other commodities, will have to be purchased at the Admiralty at its market rate." Perhaps a Conservative Government will show itself more alive to this aspect of the post than its Liberal predecessor.

DR. PAGENSTECHER, of Hamburg, has just described a new form of Frugivorous Bats from a specimen transmitted to the Natural History Museum of that city by Herr H. Soyaux, of Gaboon. *Megaloglossus woermanni*, as this new mammal is proposed to be called, is remarkable as belonging to the long-tongued division of the Pteropine Bats, which was not previously known to occur anywhere within the Æthiopian region. *Megaloglossus* is closely allied to *Macroglossus* and *Melonycteris*, and in some characters is intermediate between these two genera. In its dentition it also exactly resembles them.

WE are informed by Dr. G. A. Guldberg, of the University of Christiania, that the fishery of rorquals or fin-whales (*Balænopteræ*) established at Vadö in East Finmarken, for commercial purposes, continues to be turned to good account for scientific investigation. This year Dr. R. Collett, the well-known Norwegian naturalist, is visiting the place, and has already made many interesting observations upon the structure and habits of Rudolphi's whale (*Balænoptera borealis*), which has been captured in considerable numbers during the latter part of July, although the great blue whale (*B. sibbaldii*), generally so numerous, has not yet been seen upon the coast. This is attributed to the absence of the *Thyssanopoda inermis*, a small crustacean on which the blue whale feeds. Rudolphi's whale is called "seje" or "cod" whale by the Norwegians, as it appears on the coast at the same time as that fish, but its food is also a crustacean of a still smaller species than that which is the chief nourishment of its gigantic relative. It usually visits the coasts of Finmark between the months of May and August, and has lately been taken several times on the east coast of Great Britain (Firth of Forth, 1872; River Crouch, Essex, November 1883; mouth of the Humber, September 1884). Dr. Guldberg gives its average length as 40 feet, but says it sometimes attains 50 feet. Its shape is more elegant than that of the commoner species, *B. musculus*, which it otherwise resembles. Its colour is black, and does not show the bluish tint seen in the latter species and in *B. sibbaldii*. The sides are spotted with white, and the under parts are white with a faint reddish tinge. A new use to which the whales killed at Vadö have been lately put is tinning their flesh, which is said to be wholesome, and to find great favour in Catholic countries, where, being fish according to the zoology of the Church, it is allowed to be eaten on fast days.

WE have received the annual report for the past year of Prof. Spencer Baird, Secretary of the Smithsonian Institution. It includes an account of the work performed by the Institution itself, as well as that of the branches of the public service placed by Congress under its charge, namely, the National Museum and the Bureau of Ethnology. A sketch of the work of the United States Fish Commission and of the Geological Survey is added. We observe that the additions to the Museum are described as unexampled in extent, consequent partly upon the labours of the Geological Survey, of the Ethnological Bureau, of the first Commission, and of numerous miscellaneous explorations, both public and private. These various explorations are briefly described. Amongst the forthcoming publications is one on the Botany of North America, by Prof. Asa Gray, part II. o which is in the press. It comprises the Gamopetalous orders from *Caprifoliaceæ* to *Compositæ* inclusive. An enumeration by the author indicates that of the *Caprifoliaceæ* there are 8 genera and 47 species; of *Rubiaceæ*, 26 genera and 86 species; of *Valerianaceæ*, 2 genera and 22 species; of *Dipsacaceæ*, 1 genus and 2 species (naturalised); of *Compositæ*, 237 genera and 1610 species. It will form an octavo volume of nearly 500 pages. The geological map of the United States, commenced in 1883, has been completed and placed in the hands of the engraver. It was found, after collating all available data, that the knowledge acquired is not sufficient to warrant the extension of geological colours over the entire territory of the United States. Accordingly, California, Oregon, and parts of Montana, Idaho, Nevada, Arizona, Utah, New Mexico, and Texas remain uncoloured. This map will be issued in two editions within a few months. The first edition will be coloured in accordance with the scheme previously adopted and published by the Survey. It will form one of the plates of the Fifth Annual Report of the Survey, and a brief explanatory statement will accompany it. A second edition, with complete explanatory text, will be issued as a bulletin. In this edition the map will be printed in duplicate, one copy coloured in accordance with the published scheme, the other with a scheme now under consideration.

IT is reported from America that Cotopaxi in Ecuador began a serious eruption before daylight on July 23. Streams of lava, with ashes and stones, overwhelmed part of Chimbo, situated near Cotopaxi, and one hundred houses were destroyed. Reports from Guayaquil state that the eruption began at 1 a.m., sounding like incessant discharges of heavy artillery, shaking the earth and rattling windows and doors. At times there was a continuous roar. Guayaquil is 130 miles from Cotopaxi.

ACCORDING to a telegram from St. Petersburg to Scandinavian journals, dated August 4, severe earthquakes have taken place at Tashkend and Wernoje in Russia. In Pishek every house suffered, and the new settlements Sukuluk and Belowodsk were destroyed. In the latter place the church fell in. It is stated that fifty-four persons were killed and sixty injured. The shocks continued to be felt several days, and there are great fissures in the earth.

ACCORDING to a telegram from Simla, shocks of earthquake are again being felt in Cashmere.

THE Anthropological Congress which is shortly to be held at Rome will have a curious feature in a collection of seven hundred skulls of criminals, numbered and classified. To these will be added the photographs of 3000 and the brains of more than 150 convicts, thousands of autographs, poems, sketches, and special instruments, the work of criminals, an album containing a record of 700 observations, physical and moral, on 500 criminals and on 300 ordinary men. There will also be graphic maps of crime in Europe with reference to meteorology, food, institutions, suicide, &c.; tables of the stature of criminals in relation to the length of the arms, and of crime in towns compared to that in the country. M. Bertillon will exhibit the graphic curves of 23,000 *recidivistes* examined in twelve parts of the body and the practical results obtained. Photographs of Russian political and other criminals, especially of those from Moscow, and wax masks of a large number of celebrated criminals, will also be exhibited. All the notabilities in the science of criminal anthropology will take part in the Congress.

THE death is announced from Copenhagen of the eminent Danish archæologist, Prof. Worsaae.

A SUPPLEMENT to the *London Gazette* of August 12 gives a list of Jury Awards to the exhibitors at the International Inventions Exhibition.

THERE are now to be seen at the Inventions Exhibition Aquarium some specimens of the black bass, indigenous to the principal rivers and lakes of Canada and the United States of America, where they are found in abundance. This species is very difficult to rear in the waters of our country, and the manner in which they have become naturalised to their sphere of existence at the aquarium referred to is certainly remarkable. Their introduction to the waters of this country is extremely undesirable on account of their voracity, but they provide excellent sport to the angler.

IN regard to the introduction of the catfish to English waters by the National Fish Culture Association, which is discouraged on account of the voracity of this species, Prof. Baird, the United States Commissioner of Fish and Fisheries, writes to state that the catfish is an unmolesting animal and does not exclusively prefer live food to other kinds. The professor considers much advantage would accrue from their acclimatisation in our waters. The Association referred to has carefully noted their proclivities in the ponds where they are now located and experimented upon their food and at present cannot disprove Prof. Baird's assertion.

PROF. S. NEWCOMB, of Washington, is at present visiting Stockholm, as the guest of Prof. Hugo Gyldén, Astronomer Royal of Sweden. Prof. Newcomb proceeds to Pulkowa in order to visit the Imperial Observatory.

AT about midnight on July 29 a remarkable phenomenon was seen at Jönköping (Sweden), over lake Wettern. A strong luminosity was suddenly seen in the north, where some very peculiar clouds—looking like icebergs—were seen almost to touch the water. From these clouds electrical discharges continually proceeded, imparting to them a bluish, phosphorescent light, somewhat ruddy near the water and intensely yellow at their sides. It seemed like a constant discharge of fireworks from the lake. It was remarkable that the light—as is generally the case with an electrical discharge in the atmosphere—did not assume the form of bunches of streamers, but at one time flared up intensely and at others formed narrow bands across the clouds. Above the latter there was a faint bluish reflection. The lake lay as calm as a mirror, and though an optical illusion was uncommon in these parts, the western shore seemed close to the town, while the eastern disappeared in the clouds. Except the electricity-laden clouds in the north the sky was clear, stars shone, and the full moon was bright. Below the latter the sky seemed faintly red, compared with the intense electric light. At Katrineholm the same phenomenon was seen in the north-east. Here an intense glare was seen above a cloud, assuming the appearance of two gigantic lustrous trees, which remained thus for half an hour, when it changed into a variety of forms. There was no noise accompanying the phenomenon, which lasted in both places for about one hour. It is not probable that the phenomenon could have been of auroral nature on account of the brightness under a full moon.

M. CAMBRELENT, Inspector of Public Works, has made a report to the Agricultural Society of France on the subject of the dunes in the *landes* of Gascony. These sand-hills cover a surface of more than 85,000 hectares; they are more than 80 metres high and 5 to 6 kilometres wide. Before a method of arresting these was discovered they were being constantly pushed inland by the winds, invading and covering fields, villages, and even burying churches up to their towers. In 1780 Brémontier sought to render them immovable by planting them, after many experiments designed to develop a primary vegetation. His work has been continued with perseverance, and it is only recently that it has been completed, and these 85,000 hectares, which menaced all the country adjoining, have become covered with a rich forest vegetation which has fixed the dunes in one place. A great public danger has been converted into a large forest. But this work, which renders permanent, dunes already existing, has not prevented the sea from throwing up on the coast new sand day by day, which forms dunes, which in their turn invade the permanent dunes. After having fixed the old sand-hills, the problem was to prevent the formation of new ones. To solve this it was decided to construct a dune above high water, in which all the conditions of the movable dunes would be reversed. The form given to the latter by the wind is such that on the side of the sea they present a gentle slope, which the sand can mount easily as on an inclined plane, in order to fall down a steep decline. It is by the gentle slopes forming a series of inclined planes that the sand moves forward. The formation of the new dune was encouraged, but it was directed in such a manner that it had a steep slope on the side of the sea. To secure this a wooden palisade was erected about 120 metres away from the sea, all along the shore. The sand first struck against this in its progress, and fell at its foot, a portion of it escaping through the interstices left between the planks. The latter was carried some distance by the force of the wind, and fell, forming slight slopes, while the sand which fell at the foot of the palisade on the side near the sea formed a steep incline. Soon this reached the top of the palisade, and then the planks were drawn up by means of a special implement to the needed height, and the formation continued as before, the slope on the side of the sea growing steeper, while the other got more and more gentle. Ultimately the dune reaches such a height (generally 10 to 12 metres) that the sand can no longer get over it, and it is definitely arrested between the barrier and the sea. It falls back on the shore, unable to advance, until contrary winds come and blow it out to sea again. To fix the sand on the other side of the barrier, the *Arundo arenaria* is planted. The roots penetrate to a depth of 4 or 5 metres, and the plant always keeps its head above the increasing sand. The results obtained by this new dune (says M. Chambrelent) have been complete. The most violent storms have not been able to carry the sand over it; the latter has fallen back on the shore innocuous, and the advance of the inexhaustible sand coming from the sea has been absolutely arrested.

THE additions to the Zoological Society's Gardens during the past week include a Common Camel (*Camelus dromedarius* ♂) from Egypt, presented by Major Frank Graves; a Shag (*Phalacrocorax graculus*), from Ireland, presented by Capt. F. H. Salvin; a Common Stoat (*Mustela ermina*), British, presented by Mr. H. Hanauer; a Common Chameleon (*Chamæleon vulgaris*), from North Africa, deposited; a Spotted-tailed Dasyure (*Dasyure maculata* ♂), two Yellow-footed Rock Kangaroos (*Petrogale xanthopus* ♂ ♀), from South Australia, received in exchange; a Coquerel's Lemur (*Cheirogalens coquerali*), an Elliot's Pheasant (*Phasianus ellioti*), a Bar-tailed Pheasant (*Phasianus reevesi*), four Long-fronted Gerbilles (*Gerbillus longifrons*), bred in the Menagerie.

GEOGRAPHICAL NOTES

M. VIOLET D'AOUEST read a note at a late meeting of the Geographical Society of Paris on aërial formations on the soil. Referring to Richthofen's discovery of a vast aërial formation of loess in China, M. d'Aouest described "meteoric formations" which he had himself examined in Mexico. In 1857 he made a communication on this subject to the Society; he found in the flanks of the most elevated mountains argillaceous deposits, which could not be attributed to decomposition of the rocks there, or to the alluvion deposited by rivers, or by the rain. He referred them after investigation to atmospheric currents. In the day the winds raised the particles from the plains and carried them at night to the hills, depositing them there. In course of time these deposits had reached a thickness of thirty to fifty and in places a hundred metres. The upper part, which was generally finer, stopped at the limit of herbaceous vegetation, for beyond this there was nothing to retain the particles, which were carried down by rains, glaciers, snow, or winds to the lower part. Fifteen years later he heard of Richthofen's publication on the subject, and Col. Prjevalsky during his late journeys in Thibet states that analogous aërial deposits are now being formed under the influence of powerful winds which prevail at these altitudes. Subsequently M. d'Aouest met Baron Richthofen and discussed the subject with him, when the latter stated that these formations exist in Europe, adding that it was singular how men, unknown to and far removed from each other, could be led to make the same discoveries in wholly different regions. M. d'Aouest now intends publishing a translation of Richthofen's monograph on the subject, with a supplement of his own containing a number of important documents which he has collected on these deposits. He thinks he will be able to explain loess and argillaceous deposits, the origin of which has hitherto been regarded as problematical, by this theory.

THE *Bollettino* of the Italian Geographical Society for July prints two inedited letters of early Italian adventurers in South America, recently brought to light in the Archives of Florence and Modena. The longer and more important, dated Dec. 24, 1534, is addressed from Valenzuela (Venezuela) by a certain Tomaso Fiaschi to his brother in Florence. After mentioning the preparatory arrangements made for an expedition of 800 men organised for the purpose of seeking gold in the Orinoco basin, the writer—one of the party—describes the country, the appearance and customs of its inhabitants, the nature of the soil, its climate, animal and vegetable productions. The success of the enterprise, which, nevertheless is known to have ended in failure, is anticipated, because the natives "are so bestial and have so little understanding that they think man and horse one and the same thing, and have so much dread of said horses that they die of fear, and one horseman is worth a thousand Indians, and they also greatly dread the blunderbusses, as to them a strange thing it seems to see men dying and not not know from what; so that if they were a hundred and saw four or six of them die, all would take to flight like beasts. And so we shall go to said conquest in the name of God." Further on the men are said to take "one or two wives as best seems to them, and when they don't like them they leave them and take others, and the brother the sister, though true it is mother does not take son, but there are places where they heed nothing and are like the beasts, and worship the sun and moon. And they have a kind of cotton with which they make beautiful things to their fancy, as cloths, which the women wear in front and certain *camach* (hammocks), in which they sleep, which are the length of a man, and are attached to two stakes in their houses. Here no *grano* (wheat?) nor wine is made, but instead of grano they have a certain thing which they call *maize*, which they sow the whole year, and which springs up and grows high in two months; and likewise they sow certain *ceca*, which they call *patatta*, and it has a very large *barba* (root), and said barba is cooked in the ashes, and it has the same taste as the chestnut, &c."

A PROJECT for the compilation of a detailed topography of Italy during the Roman domination will engage the attention of the Italian Historical Congress which meets at Turin next month.

A REUTER telegram from Brussels, dated August 12, says that, according to a message from Madeira in the *Indépendance Belge*, the Marquis Buonfanti, the celebrated explorer, and M. Casman, chief of the Equator station, have died on the Upper Congo.

THE current number (Band xii. Nos. 5 and 6) of the *Verhandlungen der Gesellschaft für Erdkunde zu Berlin* contains a paper by Herr Bandelier on the border lands of ths United States and Mexico, in which he describes the territoriee of New Mexico and Arizona and the Mexican States of Sonora and Chihuahua, their climate, hydrography, topography, flora, fauna, ethnography, antiquities, &c. These subjects are touched rapidly and somewhat superficially, as Herr Bandelier delivered a lecture rather than read a paper. Dr. Hettner referred to his travels in the United States of Columbia. Our geographical knowledge of this region, he said, depends almost wholly on the surveys and description of the Italian Codazzi and the travels of Dr. Reiss and Dr. Stübel, who visited Columbia in 1867 and 1868 with the special purpose of studying the volcanoes. They visited the southern portion, and therefore Dr. Hettner decided, after having investigated the neighbourhood of Bogotá, to cross the Central Cordilleras, and visited the Cauca valley, to direct his journeys to the Eastern Cordilleras, and to study the States of Cundinamarca, Boyacá, and Santander. He had intended originally to include Western Venezuela as far as Carácas in the undertaking, but this had to be ultimately abandoned. The paper gives a brief description of the country and its people, based on these journeys. Dr. Boas describes his journey in Baffin Land in 1883-84. This paper is accompanied by a map showing the outline of the coast of Cumberland Sound and the west coast of Davis Straits according to the English Admiralty charts and to the new survey of Dr. Boas. The discrepancies are very numerous and in some cases very considerable. Herr Wagner contributes a brief sketch of the life and geographical work of the late Prof. Zöppritz.